Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Canceled).

2. (Currently Amended) ~~The method of claim 1 further comprising the steps of:~~ A method for optical coherence tomography comprising the steps of: providing of a reference light beam and a measurement light beam, combining of the reference light beam and the measurement light beam to provide a combined light beam, modulating of the reference light beam, sampling of the combined light beam to measure an amplitude of an intensity variation for each sampling position, determining a phase offset of the intensity variation of each sampling position with respect to a phase reference, providing of an adjustable optical filter for the measurement light beam, controlling of the adjustable optical filter to compensate the phase off sets, and adding of the amplitudes to provide an intensity signal for one picture element.

3. (Original) The method of claim 2, the adjustable optical filter having an adjustable optical element for each of the sampling positions, further comprising controlling each of the adjustable optical elements individually to compensate each individual phase off set.

4. (Currently Amended) The method of claim 3, ~~whereby~~ wherein the adjustable optical elements are LCD elements.

5. (Currently Amended) The method of claim ~~1~~2, ~~whereby~~ wherein the reference light beam and the measurement light beam are provided by means of a ~~fibre~~ fiber bundle.

6. (Currently Amended) The method of claim 5, whereby stress is selectively applied to individual ones of the ~~fibres~~ fibers of the ~~fibre~~ fiber bundle in order to compensate for corresponding phase offsets.

7. (Currently Amended) The method of claim ~~1~~2, whereby a single ~~fibre~~ fiber is used for

receiving of the combined light beam and the sampling is performed by means of a pivotable mirror.

8. (Currently Amended) The method of claim ~~1~~2, where motion compensation algorithms are used to correct ~~artefacts~~ artifacts resulting from motion of the object.

9. (Currently Amended) The method of claim ~~1~~2, further comprising the steps of: acquiring the intensity signals as a function of depth (D) and scan position xi, where D is the distance between the image plane and the focal plane and xi the lateral position in the focal plane, reconstructing the image from the data acquired in the previous step according to the formula: $I(x',d)=\mathrm{Sum}j[Sj(x'-(d/f)yj,d)$ whereby I(x',d): Intensity signal for picture element x' j: Index for sampling position yj: Location of the jth sampling ~~positon~~ position Sj(xi,d): Intensity signal if only data from the jth position is used f: Focal length of the objective lens x': x'=xi+(d/f)yj

10. (Currently Amended) A computer program product, such as a digital storage medium, comprising computer program means for performing the steps of: ~~sampling of a combined light beam which has been obtained by combining a reference light beam and a measurement light beam for optical coherence tomography to measure an amplitude of an intensity variation for each sampling position, adding of the amplitudes to provide an intensity signal of one picture element~~ providing of a reference light beam and a measurement light beam, combining of the reference light beam and the measurement light beam to provide a combined light beam, modulating of the reference light beam, sampling of the combined light beam to measure an amplitude of an intensity variation for each sampling position, determining a phase offset of the intensity variation of each sampling position with respect to a phase reference, providing of an adjustable optical filter for the measurement light beam, controlling of the adjustable optical filter to compensate the phase off sets, and adding of the amplitudes to provide an intensity signal for one picture element.

11. (Canceled).

12. (Previously Presented) The computer program product of claim 10, the computer program

means being adapted to perform the steps of: acquiring the intensity signals of picture elements x_i in a focal plane, determining an intensity signal of a picture element x′ in an image plane which is distanced by a depth d from the focal plane by calculating $I(x',d)$=Sum$j[Sj(x'-(d/f)yj,d)]$ whereby I(x′,d): Intensity signal for picture element X′ j: Index for sampling position yj: Location of the jth sampling positon Sj(xi,d): Intensity signal if only data from the jth position is used f: Focal length of the objective lens x′: x′=xi+(d/f)yj

13. (Canceled).

14. (Currently Amended) ~~The arrangement of claim 13 further comprising:~~ An arrangement for optical coherence tomography comprising: means **(126**; **502)** for sampling of a combined light beam **(124)** to measure an amplitude of an intensity variation for each sampling position **(144)**, means **(130**; **504)** for adding of the amplitudes to provide an intensity signal of one picture element, means **(130**, **502)** for determining a phase off set of the intensity variation of each sampling position with respect to a phase reference, an adjustable optical filter **(138**; **200)** for the measurement light beam, means **(136**; **508)** for controlling of the adjustable optical filter to compensate the phase off sets.

15. (Original) The arrangement of claim 14, the adjustable optical filter having an adjustable optical element **(142)** for each sampling position.

16. (Currently Amended) The arrangement of claim ~~13~~ 14, further comprising: acquiring the intensity signals of picture elements x_i in a focal plane **(402)**, determining an intensity signal of a picture element x′ in an image plane **(400)** which is distanced by a depth d from the focal plane by calculating,
$I(x',d)$=Sum$j[Sj(x'-(d/f)yj,d)]$ whereby I(x′,d): Intensity signal for picture element x′ j: Index for sampling position yj: Location of the jth sampling ~~positon~~ position Sj(xi,d): Intensity signal if only data from the jth position is used f: Focal length of the objective lens x′: x′=xi+(d/f)yj.